

WHAT IS CLAIMED IS:

1. A terminal electrode forming method for chip-style electronic components comprising:

an arraying step of arraying the chip-style electronic components on an arraying flat bed thereby positioning and aligning said chip-style electronic components;

an adhering step of lowering a first film coated with an adhesive together with an adhering top plate parallel to said arraying flat bed in relative manner thereto, thereby adhering ends of the positioned and aligned chip-style electronic components to said adhesive; and

a coating step of lowering said first film, to which the chip-style electronic components are adhered, in relative manner and together with a coating top plate parallel to a coating flat bed provided with a conductive paste layer of a constant thickness thereby pressing the other ends of the chip-style electronic components to said coating flat bed.

2. A terminal electrode forming method for chip-style electronic components according to claim 1, further comprising:

a drying step of drying the conductive paste coated on said other ends in said coating step; and

a reversing step of positioning a second film coated

with an adhesive on a reversing flat bed, lowering in relative manner said first film holding the chip-style electronic components after said drying step, together with a reversing top plate thereby adhering the ends coated with the conductive paste of the chip-style electronic components to the adhesive of said second film, then peeling off said first film together with the adhesive thereof, and reversing said second film holding the chip-style electronic components.

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3. A terminal electrode forming method for chip-style electronic components according to claim 1, wherein said film is formed as a tape and is fed from a roll and is wound on another roll thereby conveying the chip-style electronic components held by said adhesive.

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4. A terminal electrode forming method for chip-style electronic components according to claim 2, wherein said drying step executes drying by concentrating far-infrared light to the portions coated with the conductive paste of the chip-style electronic components.

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5. A terminal electrode forming method for chip-style electronic components according to claim 2, wherein said adhesive is a thermal foaming-release adhesive, and the heating of said first film causes the

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first film and the adhesive thereof to be released from the chip-style electronic components held by the second film.

5           6.   A terminal electrode forming apparatus for chip-style electronic components comprising:

          a first tape running mechanism to run a first adhesive tape coated with an adhesive on a surface thereof;

10           a second tape running mechanism to run a second adhesive tape coated with an adhesive on a surface thereof;

          an electronic component supply unit to adhere ends of a group of the chip-style electronic components to the adhesive-coated surface of said first adhesive tape in a manner in which said chip-style electronic components are arrayed;

          a first paste applying unit to press the other ends of the group of the chip-style electronic components conveyed by the running of said first adhesive tape to a coating flat bed thereby applying conductive paste to the other ends of the group of the chip-style electronic components;

          a first drying unit for drying the conductive paste applied on the other ends of the group of the chip-style electronic components;

          a transfer unit for transferring the group of the

chip-style electronic components having passed through  
said drying unit, from said first adhesive tape to a  
second adhesive tape thereby causing the group of the  
chip-style electronic components to be held at the ends  
5 coated with the conductive paste by the second adhesive  
tape;

a second paste applying unit for pressing the ends,  
not coated with the conductive paste, of the group of  
the chip-style conductive components conveyed by the  
10 running of said second adhesive tape to a coating flat  
bed thereby applying the conductive paste;

a second drying unit for drying the conductive paste  
applied on the ends of the group of the chip-style  
electronic components; and

15 a discharge unit for peeling off the group of the  
chip-style electronic components from said second  
adhesive tape.

7. A terminal electrode forming apparatus for  
20 chip-style electronic components according to claim 6,  
wherein said electronic component supply unit, said  
first paste applying unit and said first drying unit  
provided along the running path of said first adhesive  
tape and said second paste applying unit and said  
25 second drying unit provided along the running path of  
said second adhesive tape are positioned in a  
substantially same vertical plane in two stages of

different levels.

8. A terminal electrode forming apparatus for  
chip-style electronic components according to claim 6,  
5 wherein said first adhesive tape is adhered, in a state  
with the adhesive-coated surface thereof downward, to a  
group of the chip-style electronic components supplied  
by said electronic component supply unit, and conveys  
the chip-style electronic components at the lower side  
10 of said first adhesive tape to said first paste  
applying unit and said first drying unit, and said  
second adhesive tape is adhered, in a state with the  
adhesive-coated surface thereof downward, in said  
transfer unit to the group of the chip-style electronic  
15 components and conveys the chip-style electronic  
components at the lower side of said second adhesive  
tape to said second paste applying unit and said second  
drying unit.

20 9. A terminal electrode forming apparatus for  
chip-style electronic components according to claim 6,  
wherein the adhesives coated on said first and second  
adhesive tapes are thermal foaming-release adhesives,  
and the foaming temperature is selected higher in said  
25 second adhesive tape than in said first adhesive tape.

10. A terminal electrode forming apparatus for

chip-style electronic components according to claim 6,  
wherein said electronic component supply unit is  
provided with an arraying block having a plurality of  
through holes for receiving the chip-style electronic  
5 components and serving to array the chip-style  
electronic components in a standing state, a reference  
block having a flat surface for coming into contact  
with the lower surface of said arraying block thereby  
aligning the lower end levels of the chip-style  
10 electronic components, and a dropper for dropping the  
chip-style electronic components into said through  
holes.

11. A terminal electrode forming apparatus for  
15 chip-style electronic components according to claim 10,  
wherein a gap is formed between the lower surface of  
said arraying block and said reference block when said  
dropper drops the chip-style electronic components into  
said through holes, in such a manner that the upper  
20 ends of the chip-style electronic components received  
in said through holes do not protrude from the upper  
surface of said arraying block.

12. A terminal electrode forming apparatus for  
25 chip-style electronic components according to claim 6,  
wherein said first and second tape running mechanisms  
are respectively provided with vacuum suction rollers

for driving the first and second adhesive tapes.

13. A terminal electrode forming apparatus for chip-style electronic components according to claim 6,  
5 wherein each of said first and second paste applying units forms a conductive paste layer for dipping and a conductive paste layer for blotting or a surface not coated with the conductive paste on said coating flat bed, and is adapted to execute a first operation for  
10 dipping the ends of a group of the chip-style electronic components into said dipping conductive paste layer, and a second operation for contacting said ends with said blotting conductive paste layer or the conductive paste-uncoated surface thereby returning the  
15 excessive conductive paste to said coating flat bed by blotting.

14. A terminal electrode forming apparatus for chip-style electronic components according to claim 6,  
20 wherein said transfer unit holds said first and second adhesive tapes with said group of the chip-style electronic components therebetween, by positioning said first adhesive tape at the lower side with the adhesive-coated surface thereof upwards and said second  
25 adhesive tape at the upper side with the adhesive-coated surface thereof downwards, and causes said first adhesive tape to lose the adhesive force thereof

thereby causing said group of the chip-style electronic components to be held by said second adhesive tape.

15. A terminal electrode forming apparatus for  
5 chip-style electronic components according to claim 6,  
wherein the running direction of said first adhesive  
tape through said electronic component supply unit,  
said first paste applying unit and said first drying  
unit is opposite to the running direction of said  
10 second adhesive tape through said transfer unit, said  
second paste applying unit and said second drying unit.